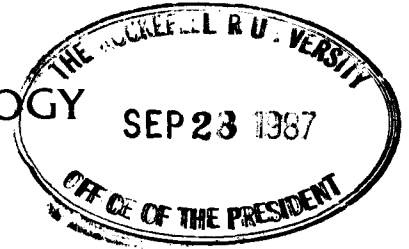


CALIFORNIA INSTITUTE OF TECHNOLOGY

DIVISION OF BIOLOGY 156-29



23 September 1987

Handwritten signature: H. H. H. ↓

Dr. Joshua Lederberg
Rockefeller University
1230 York Avenue
New York, NY 10021

Dear Josh:

Leafing through a new book on space in the bookstore recently, I ran across a quotation attributed to you to the effect that we cannot eliminate the possibility of present life on Mars because Viking sampled only two places. Assuming that this actually is your opinion, let me make a few points that convince me that we would not find life on Mars even if we turned over every rock.

The Viking evidence on the question of Martian life is far stronger than is suggested by the fact that we sampled only two sites. The data on the pressure and composition of the atmosphere are themselves sufficient to rule out the possibility of liquid water anywhere on the Martian surface--a result that reduces the possibility of present life on the planet to near zero. Add to this the striking confirmation of the pre-Viking prediction that OH radicals are formed in the atmosphere close to the surface, and the discovery of the consequences that this has had for Martian surface chemistry--and the idea that there may be life on Mars begins to sound irresponsible. Still more might be said--about the planet-wide dust storms and their relevance for the sampling question, about the interaction of shortwave ultraviolet with surface materials, etc.--but I will spare you.

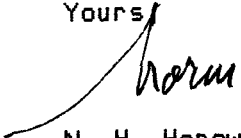
In short, the case against life on Mars is based as much on global physical characteristics of the planet as on the two samples. The samples simply confirmed the expectation derived from the physical data.

I sometimes wonder what our ideas about life on Mars would have been like if the Lowellian illusions had not been perpetuated by later generations of astronomers and if these astronomers had, instead, made honest observations of the planet--as they began to do soon after publication of the historic 1964 paper by Kaplan et al. Would there have been a biology-oriented Viking mission? Would you and I have spent all those years on that mission? Would we now be arguing about the question of life on Mars? I doubt it. I think that the belief in life on Mars is like religion: it is acquired in early childhood and, once acquired, is hard to free oneself of. And it is harder for some than for others.

Your comments would be of interest. By the way, all the above is documented in my book. If you have not seen it, let me know, and I'll be glad to send you a copy.

With best wishes,

Yours

A handwritten signature in cursive script, appearing to read "N. H. Horowitz". The signature is written in black ink and is positioned below the word "Yours".

N. H. Horowitz